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*MOSQUITOES FOUND ABOUT GAINESVILLE, FLA.

By U. C. LOFTIN

PART II.—TRAPS FOR MOSQUITOES

During the fall and winter of 1912-1913, the writer, at the suggestion of Dr. E. W. Berger,** conducted some experiments with traps for adult mosquitoes. These experiments have been recorded in an unpublished thesis, submitted at the University of Florida. The principle results are summarized here. The traps (simplified forms of the one used by Lefroy) were vessels and boxes, dark inside and of several sizes and shapes, placed where the mosquitoes would be likely to use them for hiding places in the early morning. A successful style was a plain earthenware jar, or crock, such as is often used for churns, six to eight inches in diameter, sixteen to eighteen inches high, dark chocolate to black inside (Fig. 27).

*Third and final consecutive installment of Mr. Loftin's paper.
**Dr. Berger first used the traps during June and part of July, and then placed his records at the writer's disposal.

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Another type that gave good results was wooden boxes, seven by seven inches square by thirteen inches deep, painted black or dark green inside, or lined with black or dark green cloth. A joint of six-inch stovepipe was also used with good results. Other sizes, shapes and colors of crocks and boxes were used, but it was found that the traps of small diameter and a depth of twice the diameter gave the largest catches. No noticeable difference was found between the black and the dark green cloth, but the cloth lined boxes gave slightly better results than the painted ones. It is well known that mosquitoes seek a dark place in which to hide during the day and anything that furnishes this condition and is nearly air-tight so that they can be easily killed with a fumigant can be successfully used. Mosquitoes, in common with living things in general, are positively phototactic up to a certain degree of light intensity, and negatively so after this is exceeded. With mosquitoes this optimum, or turning point, is commonly met a little before sunrise.

The traps were placed in various positions and kept uncovered during the night. They were covered from 7:00 to 7:30 in the morning, before the direct rays of the sun reached them. A board or piece of stiff cardboard makes a good cover, but the best and most convenient cover found was a wooden frame covered with wire gauze with a piece of cardboard cut to fit. This cover allows an examination of the contents and the addition of the killing agent without any danger of escape. Gasoline was found to be the cheapest and most effective fumigant. It was added at the rate of ½ teaspoonful per gallon capacity of the crock, and about twice this amount for the boxes, when they were covered in the morning, the amount depending somewhat upon the temperature, more being required on a cold day when vaporization was slower. From fifteen to twenty minutes was found sufficiently long to leave the traps covered. If the specimens are to be kept for future study, no more gasoline than will readily vaporize should be added, for otherwise the specimens will be wet and bedraggled. If they are not to be kept, a pint of boiling water poured into the crock quickly kills them.

The position of the trap is very important and upon it depends its success or failure. Most of the tests were made on porches (Fig. 31) at 203 W. Ninth Street, South, and 2300 W. Hernando Street, Gainesville, Fla., but traps were tried for

short times at several other dwellings in Gainesville, and in the dormitories and Experiment Station Building of the University of Florida.

The West Ninth Street house faces west with a porch extending entirely across the front. The woodwork is painted

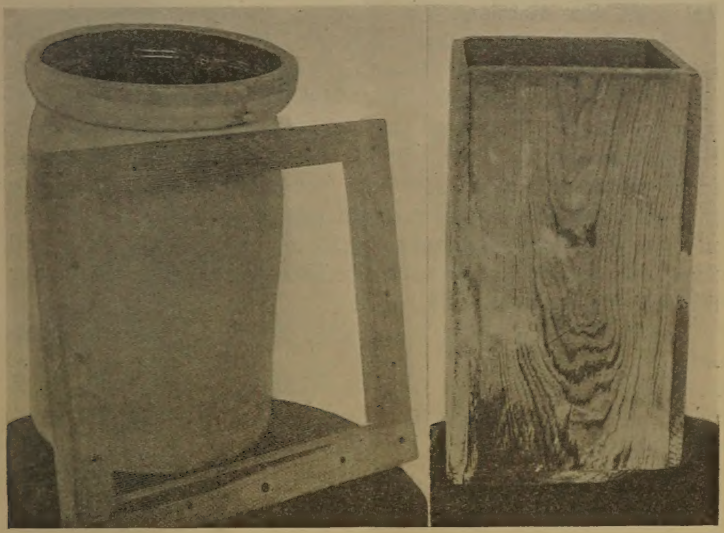

Plate V. Fig. 27. Crock, or earthenware jar, and box that gave good results as traps. Leaning against crock is shown cover consisting of a frame and fine wire netting.

dark green and the porch has a solid coping around it and a wire trellis for vines at either end. There are two double windows and a door opening on to it. The porch and the position of the traps are shown in the diagram, Figure 31a. Traps were placed on the south end of the porch on the east side next the wall (SE:bc); on the west side next the coping (SW:bc) and at a point midway between the two. On the north end they were located on the east side near the wall (NE:bbb).

The house at 2300 W. Hernando Street is situated about one-fourth mile northwest of Thomas Hall, University of Florida. It faces south with a front porch and a side porch part of the way along the east side. The woodwork is white with a door, a single window, a double window opening on the front (south)

porch and two single windows on the side (east) porch. There is a corner two feet east of the door that projects outward a couple of feet and a trellis of wisteria shades part of the front and side porches. The traps were located at the right and left of the door (D:rl); at the windows on the front (south) porch (W:bbb); and on the north end of the east porch (N:cb). See diagram, Fig. 31b.

The importance of the position of the traps is strikingly shown in Table I, which gives the records of two similar crocks situated on the south end of the West Ninth Street porch. One was on the east side near the wall (SE:c) and the other not eight feet away on the west side near the coping where it was more exposed to light (SW:c) (see Fig. 31a). The table gives the average number caught per night for a five and six months period, from October to March. (There is no record for the crock near the coping for November, hence this is for a five months period only.)

TABLE I.—THE EFFECT OF POSITION ON THE NUMBER CAUGHT

Position of Crock (c)	Months Recorded	Average No. Per Night
W. 9th St. at SE:c (1)	6	21.2
W. 9th St. at SW:c	5	11.3

(1) See Fig. 31.

This large difference is explained as follows: As day approaches the outer edge of the porch becomes light first and the mosquitoes move towards the darker side, next the green wall, and eventually settle in the traps. The house also breaks the wind on this side and the air is calmer. This tendency to go toward the darker side is also shown near the door at 2300 W. Hernando Street (Fig. 31b). A crock was placed on one side of the door and a joint of stovepipe on the other throughout the winter. Records for an average of ten nights in March show that when the crock was on the right it caught 1.56 times as many as the stovepipe on the left and that when the stovepipe was on the right it caught 1.47 times as many as the crock. This is in spite of the fact that a flower stand and a box for rubbers, etc., was always on the right and a considerable number always settled here. The conditions here are somewhat similar to those at West Ninth Street. The projecting wall shuts off the early light from the east and the wisteria vines, which end about opposite the trap, shut off the light from the front, leaving this a darkened corner. The effect of a large dark place where the mosquitoes can hide was

shown at another house. The back porch is latticed, but not screened, and mosquitoes are plentiful. A crock set in various places on and about the porch gave almost negative results, as most of the mosquitoes settled in a large dark cupboard in a corner of the porch. This being larger and equally as dark as the jar seemed more attractive. In a bedroom at 203 West Ninth Street, where the furniture and walls are light colored, four or five, and at once time a dozen mosquitoes were caught when they were not numerous enough to be troublesome, while in the dormitory, where the woodwork is dark and there are closets and bookcases for them to hide in, never more than three or four, and often none, would be caught, even when they were too numerous for comfort.

No data were secured on the relation of the direction of the wind to the number caught, but the catch was always greater on a still than on a windy night. But as a high wind was usually accompanied by a drop in temperature, this may account for most of the difference. The effect of temperature was noticed throughout the winter, a high catch always coming with a rise in temperature. The curve in Figure 32 shows the temperature recorded and the number caught in a green cloth-lined box on the porch at 2300 West Hernando Street during February, and the close correlation between the two. The temperature of February was the coldest and most variable of any month of the year.

Various substances such as apples, bananas, guavas, raw beef, urine, water, banana oil, etc., were placed in the traps as attractions, but none caused any appreciable increase in the number caught. Very definite results were secured, however, with repellants. The method employed was to place a small vial, or to pour a little of the substance to be tested in the bottom of the trap, and to have a similar trap about a foot away for a control, or check. The percentage of efficiency, as repellants, of three proprietary compounds, Bombay Vapor, oil of citronella and oil of tar, varied from 92.8% to 82% in the order named. Traps of this nature should prove useful in testing the efficiency of repellants because of the ease in which a control can be secured.

A daily record was kept of the position and the catch of the individual traps and the mosquitoes placed in vials or pill boxes for future study. Some of the specimens were destroyed by breakage, loss, destruction by ants, etc., but during the

year 20,449 individual mosquitoes were caught and identified.

Table II gives the number of males and females, the per cent of females, the number of females with blood in the abdomen, the number of females with well developed ovaries,

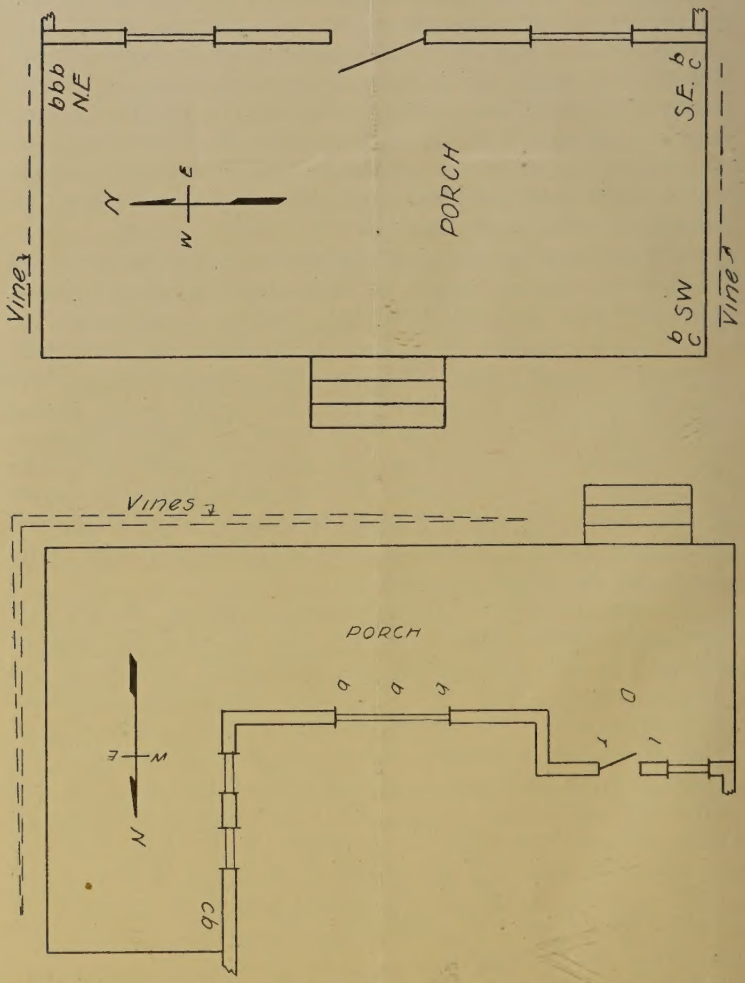

Plate VI. Fig. 31. (a) Smaller figure, diagram of porch at 203 W. Ninth Street South. Size of porch 9x26 ft. (b) Larger, L-shaped figure, diagram of porch at 2300 W. Hernando Street. Size 7 and 9 ft. by 28 and 18 ft. (b, c, r, l, stand for box trap, crock, traps right and left of door, respectively.)

the total number and the per cent of each species caught during the year.

TABLE II

Species Caught	Males	Females	Per cent of females	Females with blood in abdomen	Females with well developed ovaries	Total number	Per cent of total
Culex quinquefasciatus Say.	11723	8363	41+	839	1022	20086	98.30+
Anopheles quadrimaculatus Say.	26	171	86.8	11	18	197	.96+
Anopheles crucians Wied.	37	124	77+	8	12	161	.78—
Psorophora ciliata Fab.						2	.01—
Stegomyia calopus Meig.						3	.01+
Total	11786	8658	42.33	858	1052	20449	100.06

It is seen from the table that *Culex quinquefasciatus* is the dominant species but the percentage given is probably higher than is usually found. The relative abundance of the different species varies from time to time, but *Culex quinquefasciatus* usually comprises from 80 to 85% of those seen. During December very few *Culex quinquefasciatus* were seen at the Experiment Station, while Anopheles were common. Anopheles comprised from 15 to 20% and sometimes more of those collected by hand in the dormitories during October and November. No Anopheles were found resting on the window screens at 2300 West Hernando Street with the Culex until about December 1st. From December 1st until February 1st both species of Anopheles were found, but usually more *Anopheles quadrimaculatus*. Then *Anopheles crucians* became more abundant, comprising about 10% and sometimes more of all those seen. On March 29th, twenty-five *Anopheles crucians* and only two Culex were counted on the screen. Only an occasional individual was seen on the screens at 203 West Ninth Street, while they were always thick on the screens on the front porch at 2300 West Hernando Street, often as many as a hundred individuals being counted in the morning before they were disturbed. The wisteria vines shade the screens at the latter place while there is no such protection at the former.

Stegomyia was occasionally seen in considerable numbers about the building, but only three were taken throughout the

(Continued on page 67)

The
FLORIDA BUGGIST

Official Organ of The Florida Entomological Society, Gainesville, Florida.

PROF. J. R. WATSON.....Editor
PROF. WILMON NEWELL.....Associate Editor
DR. E. W. BERGER.....Business Manager

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In accordance with a vote of the Society at its February meeting, THE FLORIDA BUGGIST will, with the new volume, become THE FLORIDA ENTOMOLOGIST.

Yes, and the Business Manager regrets that this change of name was made without at least a month's previous notice, and without getting the vote of the non-resident members. It is the writer's belief that changes of name of a publication should not be hastily made, especially when it is considered that THE BUGGIST has completed three years of an honorable record, being successful far beyond the anticipation of its originators. A few people, somewhere in the United States, have been critical of the name *Buggist*, and so the movers for a change, Buggists who visited the Entomological meetings at St. Louis in December, rushed home and *ology* it must be with "all other ologies whatsoever". Verily, like a rush to cover of chickens from a shadow.

If those who are similarly minded will voice their sentiments by writing at once to the Secretary, there is still time for reconsideration. If the name must be changed, the writer would suggest *The Florida Insectist*—a name that is new and different, and not stale.—E. W. B.

RECENT BULLETINS OF INTEREST TO OUR READERS

Bulletin 805, U. S. D. A., "Two Leaf-Hoppers Injurious to Apple Nursery Stock," by A. J. Ackerman. The author gives only one locality for the Bean Leaf-Hopper *(Empoasca mali)* in Florida, about Ft. Lauderdale. The insect is of course exceedingly abundant over the entire state and has been frequently cited in literature to that effect.

Farmers' Bulletin 1070 on the "Fowl Tick," by F. C. Bishopp. This tick has become established in several localities in Florida.

Ohio Station Bulletin 329 on the "Peach-Tree Borer", by Gossard and King.

PERSONALS

Messrs. J. H. Montgomery, F. M. O'Bryne, Frank Stirling, J. C. Goodwin and Wilmon Newell attended the meeting of the Entomological Society of America and the American Association of Economic Entomologists at St. Louis, December 29 to January 2.

Mr. K. E. Bragdon is now County Agent for Brevard County, with headquarters at Cocoa.

Mr. A. C. Brown, Assistant Quarantine Inspector for the State Plant Board, is now on duty at the Board's offices at Gainesville.

Mr. Clarence A. Bass, having received his discharge from the navy, is now doing nursery inspection work for the State Plant Board of Florida.

Mr. F. F. Bibby has recently received his discharge from the navy.

Mr. M. M. Bass is in charge of extensive grove properties near Ft. Myers, being associated with the Standard Growers' Exchange.

Mr. B. L. Boyden was a recent caller at the office of the State Plant Board at Gainesville, conferring with members of the Plant Board staff regarding the sweet potato weevil eradication work in Baker County, Florida.

Mr. Eli K. Bynum is engaged in farming at his home at Saltillo, Miss.

Mr. Virgil Clark, Inspector for the State Plant Board, took a vacation during the holidays and returned to Gainesville with a "better half".

Mr. Leon A. Daniel is at present employed by the Atlantic Coast Line in connection with fruit inspection service.

Mr. James Kerr has completed the citrus canker eradication work at Santa Rosa, Florida, and is now working with the nursery inspection forces of the State Plant Board.

Mr. Wilmon Newell spent several days during December on the east coast of Lake Okeechobee, in connection with the Plant Board's campaign against mosaic disease of sugar cane.

Mr. W. V. Millington is assisting in the port inspection service at Key West, for the Federal Horticultural Board and the State Plant Board.

Mr. Shirley B. Walker has been reappointed Assistant Nursery Inspector for the State Plant Board.

According to the Monthly Letter of the U. S. Bureau of Entomology, Mr. H. E. Loomis, who has just returned from service in the Marine Corps, has been appointed Assistant Entomological Inspector in the Division of Truck Crop Investigations with headquarters at Macclenny, Fla.

Another member of the staff of the Experiment Station, Professor S. E. Collison, the chemist, has resigned his position to go into commercial work in New York. The migration of the older experienced men from the faculties of our universities and other scientific institutions into commercial lines has reached the proportions of almost a stampede and is a most alarming state of affairs which is bound to seriously affect the value of these institutions for decades to come. Our public schools, with their constantly shifting personnel among the teachers, furnish a shining example of the evils that result when teachers look upon their positions as a mere temporary occupation to be dropped as soon as something better can be secured. While all true scientific workers labor for the love of science, still they must eat and their families, if they have been rash enough to follow the teachings of the eugenicists and raise one, must be fed, clothed, and educated. In many cases this has become impossible on a salary whose purchasing power has been cut in two since pre-war days.

Thos. H. Jones, Entomological Assistant, U. S. Bureau of Entomology, and a member of our Society, who maintained for a few months at Ft. Myers a laboratory for the study of insects of truck crops, has returned to Louisiana. The station at Ft. Myers has been abandoned.

Mr. Weigel, of Washington, D. C., recently visited Satsuma and Gainesville in the interest of Camphor Thrips work.

Mr. E. F. DeBusk, formerly County Agent for Orange County and until recently with the Wilson Toomer Fertilizer Company, at Winter Haven, has accepted a position as Assistant Boys' Club Agent with the Extension Division of the College of Agriculture.

The unofficial nursery inspection duties of F. M. O'Byrne have been increased. Boy, 10 pounds.

REPORTS OF MEETINGS

October 27. Meeting was called to order in Language Hall at 4:30 by Vice-President Merrill. There were eleven members and visitors present. The paper of the evening was on the Japanese Beetle, by Mr. Wilmon Newell, State Plant Commissioner. The speaker gave a description of the adults and illustrated it with specimens. He also outlined the life history. Only the adult form is especially injurious. They skeletonize the leaves of a large number of plants, especially ornamentals, and are very destructive. It was introduced from Japan about ten years ago and at present is confined to a limited area in New Jersey, but is rapidly extending its range each year. Owing to inadequate control measures there is great danger of its being widely disseminated. The speaker stated his belief that the beetle would become a very severe pest if introduced into Florida.

November 24. The meeting was called to order at 4:30 by President O'Byrne with fourteen members present. Out of town members present were J. E. Graf and B. L. Boyden. The following new members were elected: M. D. Cody, University of Florida; Thos. H. Jones, Bureau of Entomology; U. C. Loftin, Federal Horticultural Board. The paper of the evening was by Dr. J. H. Montgomery, Quarantine Inspector, on "Some Phases of the Quarantine Work of the State Plant Board". The speaker emphasized the great danger of introducing injurious insects into Florida. There is especial danger of introducing the Citrus Flack Fly from Cuba on account of inefficient control measures. There is also great danger of introducing the European Corn Borer from New England on straw used for packing. The insect, if introduced into Florida, would probably attack sugar cane. The outlook is very promising for the eradication of the sweet potato weevil from Baker County. Every effort is being made to prevent the spread of the weevil to portions of the state not now infested. He concluded by calling attention to the real danger of introducing severe pests from Central and South America and to the fact that little is known concerning the insects in those countries.

Mr. G. B. Merrill, Assistant Entomologist, thtn gave an account of the work of the Entomological Department of the State Plant Board in connection with the quarantine in-

spector's task. Specimens sent in by the inspectors are identified if possible, but in some cases it has been necessary to refer the material to the U. S. Bureau of Entomology or elsewhere.

Under the head of "Timely Notes", Mr. Frank Stirling, General Inspector State Plant Board, gave an account of the large hornets' nest constructed during the summer at the home of President A. A. Murphree. The hornets *(Vespa canadensis)* had constructed a nest about eight feet long and several feet wide under the eaves. They were destroyed by a misty spray of kerosene and the nest removed.

Prof. J. R. Watson exhibited a map which he had prepared showing the months of average maximum and minimum precipitation thruout the state. This map showed that the rainy season starts in June in the south central part of the peninsula and spreads in both directions from this center during the four succeeding months, concluding in Palm Beach and Dade Counties in October. He also showed specimens of a new thrips, *Trichothrips drakei,* which is remarkable for its size, 3 mm.; and also specimens of the Puss Moth, exceptionally large numbers of the caterpillars of which have been sent to the Experiment Station during the fall.—H. S. Davis, Secretary.

January 26, 1920. Meeting of the Society was called to order by the Vice-President, Mr. Merrill, at 4:30 P. M. Present the following: Newell, Berger, Stirling, Merrill, Watson, Montgomery, Stone, Goodwin, Davis, Fattig, Schlobig, and Brown, members; and Mr. Dely Hunt, guest.

Minutes of the previous meeting were read and approved.

This being the first meeting of the new year, annual election of officers was held. Mr. Geo. B. Merrill was elected President; C. M. Hunt, Vice-President; J. H. Montgomery, Secretary; and Dr. Davis, member of the executive committee. The business and editorial staff of the official organ of the Society, THE FLORIDA BUGGIST, were re-elected. It was moved and passed that the retiring President, Mr. F. M. O'Byrne, be requested to deliver the annual presidential address at the February meeting of the Society.

Dr. E. W. Berger, Business Manager of THE FLORIDA BUGGIST, presented a report on the financial condition of that publication. This report was received, accepted and filed.

Dr. J. H. Montgomery discussed the pink bollworm situation in Texas with more particular reference to the efforts being made by the federal and state authorities to handle the situation. The discovery of reinfestation in some of the fields in southeastern Texas last fall has been the occasion for a conference of state officials held at Houston and Beaumont early in December. Dr. Montgomery reported that the situation, although discouraging and disquieting, is not necessarily alarming. No radical changes are contemplated in the eradication methods which have been made use of other than the extension of the period of quarantine on infested fields to cover a period of not less than two years.

Mr. Frank Stirling made a further report on observations made by him in connection with the destruction of a large wasp nest. This nest or colony had become established between the walls and under the eaves of the house of Dr. Murphree. Mr. Stirling and others undertook to destroy this colony with most satisfactory results. The outstanding feature of this account was that the efficiency of the use of an oil fog to control the wasps during the destruction was demonstrated.

Dr. Berger, Entomologist, State Plant Board, made a preliminary report on the work which he is doing in producing pure cultures of the Cuban Aschersonia, a fungus found infecting several soft scales.

Under the head of new business, notice was given of a proposed change in the constitution to the effect that the Business Manager of THE BUGGIST shall also act as Treasurer of the Society. Under the constitution a change can only be made by a two-thirds vote of the members present at a meeting held thirty days subsequent to the giving of notice of the proposed change.—J. H. Montgomery, Secretary.

February 23. Meeting of the Society was called to order, the President, Mr. Merrill, in the chair. Members present: Mr. Merrill, the President, in the chair. Members present: Newell, O'Byrne, Chaffin, Goodwin, Brown, Stirling, Watson, Schlobig, Berger, Montgomery and the President.

Minutes of the previous meeting were read, corrected and approved.

The paper of the evening was read by Mr. O'Byrne, retiring

President, his subject being "Standardization of Nursery Inspection Rules and Requirements".

Notice of the proposed amendment to Article III of the Constitution of the Society having been given at the last previous meeting the proposed amendment was presented to be voted upon. The amendment was adopted and read as follows:

> "The officers shall consist of a President, a Vice-President, a Secretary and a Treasurer. There shall be an executive committee consisting of the President, Secretary and one other member. The officers shall be elected at the annual meeting in January."

Under the head of new business, Dr. Montgomery presented for consideration of the Society a proposition to change the name of the official organ of the Society. There was considerable discussion which was participated in by practically all members present, and after considering various suggestions decision was finally arrived at that the name of the publication be changed from THE FLORIDA BUGGIST to THE FLORIDA ENTOMOLOGIST, this upon motion of Mr. O'Byrne, seconded by Dr. Montgomery.

Under Timely Notes Mr. Watson, Entomologist Florida Experiment Station, displayed specimens of a spider, the "black widow", *Latrodaectus mactans*. This is said to be the most poisonous of the spider family known in Florida.

Mr. Goodwin reported a newspaper item indicating that the pink bollworm had found lodgment in Louisiana near the Texas line.

Dr. Berger made further report on production of Cuban Aschersonia, *Aschersonia cubensis*, and two or three other fungi (names not known). Dr. Berger reported that the growth of these cultures was very much slower than the yellow and red aschersonias.—J. H. Montgomery, Secretary.

OUCH!

On the first page of Bulletin 87 of the Arizona Agricultural Experiment Station occurs the following remark: "Many farmers now located in Arizona have had experience with it (the boll weevil) in Texas, Oklahoma and other states of the *so called cotton belt*" (italics mine).

MOSQUITOES FOUND ABOUT GAINESVILLE, FLA.

(Continued from page 59)

year in the traps. Psorophora were usually rare, but comprised about 75% of a lot collected by hand or found dead on the window sills of the Agricultural Building. They were sometimes troublesome at night during May in Science Hall. Two or three specimens of Megarhinus were collected, but were never taken from traps.

The percentage of females caught in traps is much lower for Culex than for Anopheles. Smith (1) has pointed out that male mosquitoes do not fly as far as females and that more females than males enter the house. He collected some outside and some inside the house, a total of 1,350, representing several species. Of these taken outside, only a small percentage (10-23%) of those breeding considerable distances away were males, while 60% of the *Culex pipiens*, which were breeding locally, were males. Of a total of 318 individuals taken within the house, Smith did not find a single male. Lefroy (2) caught an average of 21.8% females in a similar trap set inside the house.

Culex were found breeding closer to both houses than Anopheles.

TABLE III.—AVERAGE NUMBER CAUGHT PER MONTH IN SIMILAR CROCKS AT BOTH STATIONS

Month	Average Number Caught Per Night	
	203 W. Ninth St. S.	2300 W. Hernando St.
September, 1912	21.0	30.1
October	44.2	78.7
November	14.3	23.2
December	14.2	32.0
January, 1913	12.0	15.0
February	14.5	25.0
March	31.1	49.0
April	12.2	30.0
May	10.5	22.3
Average per year	19.3	33.9

The number given as having blood in the abdomen included only those in which the blood was undigested and could be seen through the abdominal walls as a dark clot. All of those with the abdomen plump and distended, where no blood could be seen, were counted as having well developed ovaries, though some of them were probably distended with other food.

(1). Smith, John B., Annual Report of the Entomologist, Report of the New Jersey Experiment Station for 1902.
(2). See "Literature Cited".

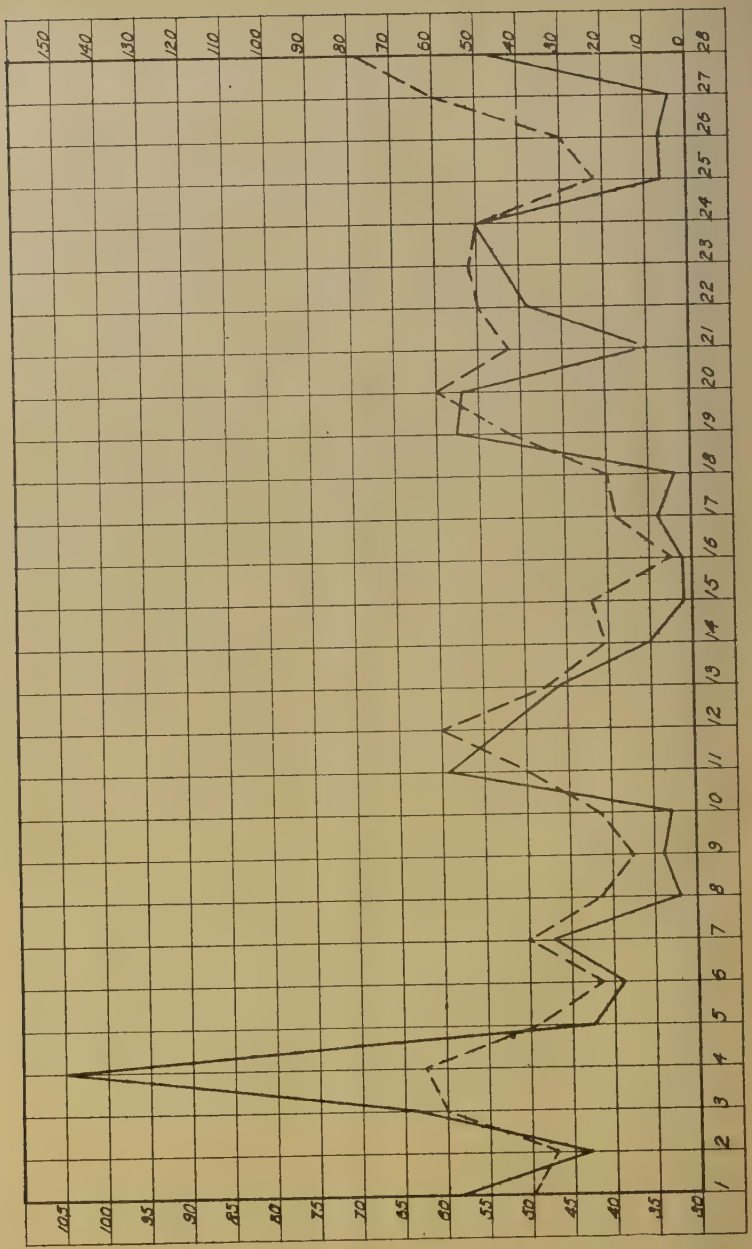

Plate VII. Fig. 32. Curves showing correlation between temperature and the number of mosquitoes caught per night during February, 1913. Figures at left and dotted line denote temperature, degrees F.; figures at bottom denote days of the month; figures at right and solid line denote the number caught. Porch, 2300 Hernando Street, corner Waukulla Avenue, Lot 1, Block 5, College Park Plat, Gainesville, Fla. Trap, a box (see Fig. 27) lined with dark green cloth.

In twenty-five dissections, however, all contained well developed eggs, the number varying from 30 to 130, depending upon the size of the specimens, with an average of 80.5 eggs.

In Table III is given the monthly average number caught per night in similar crocks situated on the southeast end of the porch at 203 West Ninth Street (Fig. 31a SE:c), and on the right side of the door at 2300 West Hernando Street (Fig. 31 b:r).

PRACTICAL USE OF TRAPS

Traps of this nature may not rid a place of mosquitoes, nor even reduce the number enough to make them unobjectionable. But in favorable positions, they will catch large numbers and certainly could be used as a controlling factor. The average number caught throughout the year (September to May) by a single crock at 2300 West Hernando Street, was 33.9 per night. This would give a total of over twelve thousand for the year. Suppose one thousand houses in Gainesville should run two of the traps, one on the front porch and one on the back porch, for a year. This would rid the city of twenty-four million pests—I dare say more than have ever been killed by artificial means within the city in the last ten years. Certainly they are not so plentiful in Gainesville that these twenty-four million would not be missed. But even this is not all; each female caught during the winter and spring is cut off from becoming the progenitor of at least a thousand others during the summer. If every home would cooperate by running one or two of these traps, at least during the winter and early spring, the number of mosquitoes present would probably be greatly reduced.

Such traps also afford a very convenient means for testing the efficiency of repellants and determining the relative abundance of mosquitoes at different seasons.

SUMMARY

1. All of the mosquitoes found at the University breed locally, but the breeding areas are small and could be drained with the expenditure of a small amount of money.

2. Traps used for adults, when favorably located on porches, have caught an average of thirty-three mosquitoes per night for nine months.

3. Crocks and boxes, black inside or lined with dark cloth,

have given the best results. They should be rather narrow and deep.

4. The success or failure of traps depends on the location. They should be placed in a well lighted room or porch, which is free from dark cupboards, closets, etc. The best position is determined by experiments.

5. High winds affect the number caught, but temperature is the most important factor. The largest numbers caught were on warm still nights.

6. Not all species are equally attracted to the traps. *Culex quinquefasciatus* is attracted more than Anopheles or Stegomyia.

7. These traps are not recommended to rid a place of mosquitoes, but if used with judgment they will reduce the number present in the house or outside. Such traps are also useful for collecting mosquitoes for specimens, demonstration or class uses, or for testing repellants.

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KEY TO NORTH AMERICAN SPECIES OF PHYSOTHRIPS

(Continued from page 32)

The genus *Physothrips* is part of the old genus *Euthrips* which name Karny (1909) has shown should be applied to the genus *Anaphothrips*. The species formerly included under *Euthrips* are now divided between four genera which may be separated by the following key:

1. Tibia with a strong, curved spine on the end.....*Odontothrips* Serville
2. Tibia without such a spine.
   a. Wings with transverse bands.....*Taeniothrips* Serville
   aa. Wings without transverse bands.
      b. Bristles on the fore angles of the prothorax conspicuous. *Frankliniella* Karny
      bb. Bristles on the fore angles of the prothorax not conspicuous. *Physothrips* Karny

KEY TO THE NORTH AMERICAN SPECIES OF PHYSOTHRIPS

(Adapted from Jones, 1912)

1. General color white to light yellow or orange. Head noticeably wider than long.
   a. Last two segments of antennae rather long and slender, and together about 2-3 as long as segment 6. Wings shaded brown except near base and apex.....*P. orchardii* (Moulton)
   aa. Last two segments of antennae not long and slender, about ½ as long as segment 6. Wings not shaded brown.
      b. Ring vein and longitudinal veins conspicuous. Wings dilute yellow.....*P. costalis* (Jones)
      bb. Ring and longitudinal veins not conspicuous. Wings white. *P. albus* (Moulton)
2. General color brown.
   a. Head nearly as long as wide; no prominent bristles in front of posterior ocelli.....*P. longirostrum* (Jones)
   aa. Head noticeably wider than long; a prominent spine in front of each posterior ocellus.
      b. Eyes not pilose; postocular bristles present; antennal segments 3 and 4 not pedicellate; posterior longitudinal vein of fore wings with 13 spines.....*P. ehrhornii* (Moulton)
      bb. Eyes sparsely pilose; post-ocular bristles absent; antennal segments 3 and 4 pedicellate; posterior longitudinal vein with 11 or 12 spines.....*P. blacki* n. sp.

"Here's to the chigger
That isn't any bigger
Than the point of a very small pin,
But the lump he raises,
Itches like blazes
And there's where the rub comes in."

WANTED—A temporary laboratory assistant in the Department of Entomology of the Florida Agricultural Experiment Station. Address J. R. Watson, Gainesville, Fla.

STRATEGUS WANTED—Am making a special study of this genus, of the Scarabeidae, and should be very glad to receive Florida specimens, especially of the rarer species. Will exchange or pay cash. Address W. Knaus, McPherson, Kansas.

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